

## **Appendix D**

### **Financial Assessment Report**



# **Regional Biosolids & Biogas Facility Environmental Study Report**

Utilities Kingston

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**Financial Assessment of Alternative Design  
Concepts**

July 2, 2024

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July 2, 2024

Betsy Varghese  
Partner  
Dillon Consulting Limited  
235 Yorkland Blvd, Suite 800  
Toronto, Ontario  
M2J 4Y8

Dear Betsy Varghese:

Re: Regional Biosolids & Biogas Facility Environmental Study Report – Financial Assessment of Alternative Design Concepts

Watson & Associates Economists Ltd. (Watson) was retained by Utilities Kingston as part of the Dillon Consulting Limited (Dillon) consulting team to undertake the above referenced financial assessment. Watson's role on the assignment was to review the background materials related to the design concepts for an integrated biosolids and source separated organics processing facility (i.e. the Regional Biosolids & Biogas Facility) and evaluate the alternatives from a financial perspective.

This report summarizes our financial assessment of the alternative design concepts for the Regional Biosolids & Biogas Facility.

Yours very truly,

WATSON & ASSOCIATES ECONOMISTS LTD.



Andrew Grunda, MBA, CPA, CMA  
Principal



## 1. Introduction

Watson & Associates Economists Ltd. (Watson) was retained by Utilities Kingston (UK) as part of the Dillon Consulting Limited (Dillon) consulting team to undertake a financial assessment of the design concepts for an integrated biosolids and source separated organics processing facility (i.e. the Regional Biosolids & Biogas Facility). The background materials considered two alternative design concepts for the proposed Regional Biosolids and Biogas Facility to be located at the Knox Farm site. The financial assessment of the alternative design concepts considered;

- The capital cost estimates for each design concept and potential funding options;
- Lifecycle costs related to the future capital replacement of the Regional Biosolids & Biogas Facility;
- Annual operating costs for each design concept alternative and potential revenues to offset the costs of biosolids processing; and
- Annualized financial plan forecast over the 2030-2060 period and net present value to compare the two alternative design concepts.

As input to the financial assessment, Dillon provided a summary of the two alternative design concepts.

- Alternative Design Concept 1 – maximizing resource recovery – this concept prioritizes the generation of renewable natural gas (RNG) and biosolid residuals with an emphasis on retaining nutrient value for beneficial reuse in agriculture.
- Alternative Design Concept 2 – minimizing utility demands and residuals volume – this concept prioritizes simplicity of operation, reduces utility usage and production of lower-volume biosolids to store and transport.

Additional assumptions underlying the alternative design concepts assume initial operation in 2030, with an ultimate operation year of 2060. The annual quantity of feedstock for the Regional Biosolids & Biogas Facility, including source separated organics (SSO) generated from the City of Kingston (City) Green Bin program and municipal biosolids from the City wastewater treatment plants, were forecast over this period. Three forecast scenarios were prepared by Dillon with differing assumptions on the service area, participation rate and diversion rate. For the purposes of this assessment, Scenario 2, which assumes a service area confined to the City boundaries with an increased participation rate of 66% and organic diversion rate of 76%. The City growth forecast over the period is based on 2023 UK program households and the "City of Kingston Growth Forecast Update, Summary of Draft Findings Tech Memo (Watson) 2021-2051". Table 1 summarizes the total loading tonnage by feedstock and program



household assumptions used in the alternative design concepts and financial assessment.

**Table 1**  
**Utilities Kingston**  
**Regional Biosolids & Biogas Facility Alternative Design Concepts**  
**2030-2060 Annual Total Loading Tonnage and Program Households Forecast**

Year	Wet Tonnages per Year @15% (wTPY)				Dry Tonnages per Year (DTPY)		Organic Waste Diversion Tonnes per Year (SSO Quantity)	Total Loading Tonnage (TPY)	Total Program Households
	Cat Bay	Ravensview	Thickened Undigested Biosolids	Cat Bay	Ravensview	Total DTPY			
2030	11,469	14,515	25,984	1,721	2,178	3,898	7,102	33,086	43,927
2031	11,639	14,729	26,368	1,746	2,210	3,956	7,207	33,575	44,576
2032	11,811	14,947	26,758	1,772	2,243	4,015	7,306	34,064	45,190
2033	11,974	15,153	27,127	1,797	2,273	4,070	7,407	34,534	45,813
2034	12,139	15,362	27,500	1,821	2,305	4,126	7,509	35,009	46,444
2035	12,306	15,573	27,879	1,846	2,336	4,183	7,612	35,491	47,084
2036	12,475	15,788	28,263	1,872	2,369	4,240	7,717	35,980	47,732
2037	12,647	16,005	28,653	1,898	2,401	4,299	7,808	36,461	48,297
2038	12,797	16,195	28,992	1,920	2,430	4,350	7,901	36,893	48,869
2039	12,948	16,387	29,335	1,943	2,458	4,401	7,994	37,329	49,447
2040	13,102	16,581	29,682	1,966	2,488	4,453	8,089	37,771	50,033
2041	13,257	16,777	30,034	1,989	2,517	4,506	8,185	38,218	50,625
2042	13,414	16,975	30,389	2,013	2,547	4,559	8,266	38,655	51,128
2043	13,547	17,144	30,691	2,033	2,572	4,605	8,348	39,039	51,636
2044	13,681	17,314	30,996	2,053	2,598	4,650	8,431	39,427	52,148
2045	13,817	17,486	31,303	2,073	2,623	4,697	8,515	39,818	52,666
2046	13,955	17,660	31,614	2,094	2,650	4,743	8,599	40,214	53,189
2047	14,093	17,835	31,928	2,115	2,676	4,790	8,681	40,609	53,692
2048	14,226	18,004	32,230	2,135	2,701	4,836	8,763	40,993	54,200
2049	14,361	18,174	32,535	2,155	2,727	4,881	8,846	41,381	54,713
2050	14,497	18,346	32,843	2,175	2,752	4,928	8,929	41,773	55,231
2051	14,634	18,520	33,154	2,196	2,779	4,974	9,014	42,168	55,753
2052	14,773	18,695	33,467	2,216	2,805	5,021	9,099	42,567	56,281
2053	14,912	18,872	33,784	2,237	2,831	5,069	9,185	42,969	56,813
2054	15,053	19,050	34,104	2,259	2,858	5,117	9,272	43,376	57,351
2055	15,196	19,231	34,425	2,280	2,885	5,165	9,360	43,786	57,893
2056	15,340	19,413	34,752	2,302	2,912	5,214	9,448	44,201	58,441
2057	15,485	19,596	35,081	2,323	2,940	5,263	9,538	44,619	58,994
2058	15,631	19,782	35,413	2,345	2,968	5,313	9,628	45,041	59,552
2059	15,779	19,969	35,748	2,367	2,996	5,363	9,719	45,467	60,116
2060	15,928	20,158	36,086	2,390	3,024	5,414	9,811	45,897	60,684



## 2. Capital Expenditures and Funding Alternatives

### 2.1 Capital Expenditures

Dillon provided detailed capital cost estimates for each alternative design concept. Capital cost estimates were provided in 2024 values. The capital cost estimates include direct costs of equipment and construction costs, as well as indirect cost estimates for allowances, contingencies and engineering. Table 2 provides a summary of the detailed cost estimates by cost component. In total, Design Concept 1 has a lower capital cost estimate of \$70.8 million, as compared to the total capital cost estimate of \$84.9 million for Design Concept 2.

**Table 2**  
**Utilities Kingston**  
**Regional Biosolids & Biogas Facility Alternative Design Concepts**  
**Capital Cost Estimates (2024\$)**

	Capital Costs (2024\$)	
	Design Concept 1	Design Concept 2
<b>DIRECT COSTS</b>		
<u>Equipment</u>		
Equipment Package	15,573,724	17,015,735
Biofilter Equipment Package	1,000,000	2,000,000
Biogas Upgrading System	3,000,000	2,917,473
<u>Construction</u>		
Site Work	5,565,000	3,675,000
Roadwork around site	930,300	1,544,078
Admin Building Parking Lot	45,465	45,465
Stormwater Pond	871,500	-
Vendor Structural/Arch Package	6,510,000	3,438,750
Building Structural/Arch	3,986,966	14,534,607
Electrical, Instrumentation, and Controls	2,835,000	3,675,000
Mechanical/HVAC	5,145,000	5,775,000
Existing WWTP retrofit cost allowance	525,000	525,000
<b>TOTAL DIRECT COSTS</b>	<b>45,987,955</b>	<b>55,146,108</b>
<b>INDIRECT COSTS</b>		
Construction Allowances (bonding, mobilization, trial operation), 4%	1,839,518	2,205,844
Contingency - Estimating, 30%	13,796,386	16,543,832
Engineering, 20%	9,197,591	11,029,222
<b>TOTAL INDIRECT COSTS</b>	<b>24,833,495</b>	<b>29,778,898</b>
<b>TOTAL PROJECT COST ESTIMATE</b>	<b>70,821,450</b>	<b>84,925,007</b>



The financial assessment forecast in appendix is provided in current values, with assumed capital cost inflation of 3.5% annually. It further assumes that all capital costs would be incurred in 2030. Capital financing and funding alternatives are addressed in the following subsection.

## 2.2 Capital Financing and Funding Alternatives

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### 2.2.1 Capital Financing

The financial assessment forecast assumes that the total capital expenditures will be debenture financed in 2030 over a 20-year term. A debt financing rate of 5% interest has been assumed. Annual debt payments are incorporated into the operating budget forecast in the subsequent section of this report. The annual debt payments have been classified as growth-related and non-growth related debt. The former is anticipated to be funded from charges imposed on new development for the capital costs and service capacity built into the alternative design concepts, accommodating the average cost service demands of development to 2060. This will require the interim financing for debt payments from the user fees recovery source over the first 20-years of the forecast, with subsequent contributions from the growth-related funding source during the 2051-2060 period.

### 2.2.2 Growth-Related Capital Funding

The City imposes development charges (D.C.) to recover the anticipated increase in need for services related to new development. D.C.s are a mechanism to recover the anticipated capital costs related to the increase in need for services. The City currently imposes charges on new residential and non-residential development to recover the anticipated capital costs of water and wastewater services delivered by UK. Under the *Development Charges Act*, municipalities can impose charges for eligible services which include wastewater services and waste diversion services.

In addition, or in place of D.C.s, Part XII of the *Municipal Act* (i.e. fees and charges) allows municipalities to impose charges for services provided or provided on their behalf. The City previously used these legislative permissions to impose Impost Fees on development for the benefit conferred through the capital costs of water and wastewater services. This mechanism could be used to impose similar charges on development or users of the service outside of the City boundary. There are no restrictions on eligible services under the *Municipal Act*. While the service area is currently restricted in the alternative design concepts to the City boundary, this funding tool could be considered if this service area boundary was to be expanded.

In this context, potential growth-related funding from new development was considered as part of the financial assessment. Table 3 provides a calculation of the per household recovery rate that could be considered for implementation in 2030\$. Applying the



inflated<sup>1</sup> capital costs on an average cost basis of the total loading tonnage (TPY) in Table 1, Design Concept 1 produces a capital cost rate of \$1,897/TPY. By comparison, the capital cost rate for Design Concept 2 is \$2,275/TPY. Applying these capital cost rates to the total loading tonnage of development anticipated to occur between 2030-2060 would suggest a potential growth-related capital cost share<sup>2</sup> of \$24.3 million and \$29.1 million for Design Concept 1 and 2 respectively.

To fund these growth-related capital costs from new development by way of a D.C or Municipal Act capital charge, \$1,294/residential unit would be required under Design Concept 1 and \$1,551/residential unit would be required under Design Concept 2. These per household recovery rates include principal and net financing costs<sup>3</sup> to fully recover the anticipated debenture costs of capital.

**Table 3**  
**Utilities Kingston**  
**Regional Biosolids & Biogas Facility Alternative Design Concepts**  
**Growth-Related Capital Funding – Per Household Recovery Rate (2030\$)**

	Capital Costs (2030\$)	
	Design Concept 1	Design Concept 2
TOTAL PROJECT COST ESTIMATE	87,057,645	104,394,517
Total Annual Loading Tonnage(TPY) - 2060	45,897	45,897
Total Capital Cost per TPY	1,897	2,275
2030 TPY Capital Cost	62,756,620	75,254,127
2060 TPY Capital Cost	87,057,645	104,394,517
Potential Growth-Related Recovery	24,301,024	29,140,390
Per Household Recovery Rate (incl. indexing and financing)	1,294	1,551

The financial assessment forecast assumes these charges would be imposed on new development within the City commencing in 2030. Revenue secured through these charges would be deposited into a reserve fund and used to offset annual debt payments for growth-related financing during the 2031-2050 period. For the period, 2051-2060 annual contributions to operating would be provided for revenue collected to offset operating expenditures.

<sup>1</sup> Inflated at 3.5% annually.

<sup>2</sup> The growth-related capital cost share should be further evaluated to determine the ultimate service capacity of the Regional Biosolids and Biogas Facility. Analysis assumes ultimate service capacity to 2060 City of Kingston program households.

<sup>3</sup> Including debt financing rate of 5% and charge indexing at 3.5% annually.



### **2.2.3 Lifecycle Capital Needs**

Once the initial capital costs for the Regional Biosolids and Biogas Facility have been incurred, a full cost financial assessment should consider the future lifecycle capital costs of rehabilitation and replacement. In this regard, a sinking fund lifecycle capital cost has been determined to incorporate into the financial assessment forecast. The City's D.C. Background Study assumes an average single-asset useful life of 80 years for wastewater facilities. On the basis of this assumptions and recognizing the financing of initial asset over 20-years, an annual sinking fund amount has been determined for a 60-year period at a 0.5% interest rate spread between capital inflation and interest income.

This calculation produces an annual reserve fund contribution of \$1.7 million for Design Concept 1 and \$2.0 million for Design Concept 2. These annual reserve contributions are included in the financial assessment forecast commencing in 2051 once the annual debt financing payments for the initial asset emplacement have concluded. Under Design Concept 1, a total reserve fund balance of \$19.54 million will have accumulated by the end of the forecast period for future lifecycle obligations. Under Design Concept 2, the 2060 reserve fund balance is forecast to be \$23.4 million.

## **3. Net Operating Expenditures**

### **3.1 Operating Expenditures**

Dillon provided detailed operating budget forecast assumptions for 2060. The annual operating expenditures include costs of labour, and other direct operating expenditures including utilities, chemicals and HVAC/heating. The forecast also includes additional operating costs for biogas upgrading and processing, as well as annual maintenance cost for equipment<sup>4</sup>. Similar to the capital cost estimates, operating expenditures are assumed to be denominated in 2024 values. The financial assessment forecast in appendix is provided in current values, with assumed operating cost inflation of 2.5% annually.

Annual labour and HVAC/heating costs assumed to be incurred in 2030 and remain fixed over the forecast period. Annual maintenance costs are estimated at 2% of the total equipment capital cost for the respective alternative design concept. Biogas upgrading and processing costs are forecast to based on each design concepts anticipated daily biogas production in 2060. Incorporating these expenditures into the financial assessment forecast, daily biogas production is assumed to scale relative to

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<sup>4</sup> Note, operating cost estimates exclude taxes, regulatory approvals and property taxes.



total loading tonnage. As such, both biogas operating expenditures and revenues have been prorated over the forecast period on this basis.

Other annual direct operating costs, such as utility and chemicals, were estimated under Design Concept 1 based on a vendor provide rate per dry tonne. The financial assessment forecast calculates the annual operating expenditures by applying this rate to the dry tonne per year forecast in Table 1. For consistency between the alternatives, this proration of other annual direct operating expenditures has also been applied to the 2060 forecast operating expenditures under Design Concept 2.

### 3.2 Operating Revenues

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Dillon provided biogas projections for each alternative design concept to 2060. As noted above, these have been scaled to 2030 based on total loading tonnage. The use application is for biogas upgrading and injection into a natural gas pipeline as RNG. The anticipated RNG revenue is forecast by Dillon based on a rate of \$0.37/m<sup>3</sup>. This rate reflects the Utilities Kingston block 1 rate for natural gas. This rate has been applied to the biogas projections to determine the potential operating revenue offset in the financial assessment forecast. Similar to the operating expenditure forecast, the financial assessment forecast in appendix is provided in current values, with assumed price inflation of 2.5% annually.

Treated biosolids are anticipated to be trucked to licensed agricultural fields for land application of CFIA grade biosolids at no cost to UK. As such, no operating revenues are being projected for the treated biosolids in the financial forecast.

Table 4 provides a comparison of the net annual operating expenditures in 2030 and 2060 for each alternative design concept, with inflation. In total, the net operating costs for Design Concept 2 would be approximately 40% lower than Design Concept 1. Annual net operating costs in 2030 for Design Concept 1 total \$2.0 million, as compared to an annual net operating cost estimate of \$1.2 million for Design Concept 2. By 2060, the annual net operating cost estimate for Design Concept 1 is \$5.3 million as compared \$3.3 million for Design Concept 2.

A sensitivity analysis was undertaken for a higher operating revenue scenario. Under this analysis, RNG revenue is forecast based on a rate of \$0.89/m<sup>3</sup>, reflective of the RNG unit price presented for illustrative purposes on the Enbridge Inc. website. This rate produces biogas revenues 2.4 times greater than presented in Table 4. Table 5 provides the 2030 and 2060 annual net operating expenditure comparisons for each alternative design concept with the higher biogas revenue assumptions. Under this sensitivity analysis the net operating costs for Design Concept 2 would be approximately 60% lower than Design Concept 1.



It should be noted that the annual capital related costs of debt and reserve fund transfers are not included in the operating expenditures summaries in Table 4 and 5. These costs have been included in the net financial impact summary in the next section.

**Table 4  
Utilities Kingston  
Regional Biosolids & Biogas Facility Alternative Design Concepts  
2030 and 2060 Annual Net Operating Expenditures (inflated \$)**

	2030 Operating Expenditures (inflated\$)		2060 Operating Expenditures (inflated\$)	
	Design Concept 1	Design Concept 2	Design Concept 1	Design Concept 2
<b>Operating Expenditures</b>				
Labour Costs	580,000	580,000	1,220,000	1,220,000
Annual Operating Costs (incl. utility and chemicals)	1,133,000	213,000	3,761,000	1,483,000
Additional HVAC/heating Requirements	60,000	59,000	130,000	127,000
Biogas Upgrading and Processing	487,000	373,000	1,417,000	1,086,000
Maintenance Costs (2% of capital equipment)	481,000	539,000	1,009,000	1,133,000
<b>Annual Operating Expenditures</b>	<b>2,741,000</b>	<b>1,764,000</b>	<b>7,537,000</b>	<b>5,049,000</b>
Biogas Revenue (@ \$0.37/m3)	773,000	592,000	2,248,000	1,724,000
<b>Net Operating Expenditures</b>	<b>1,968,000</b>	<b>1,172,000</b>	<b>5,289,000</b>	<b>3,325,000</b>

**Table 5  
Utilities Kingston  
Regional Biosolids & Biogas Facility Alternative Design Concepts  
Higher Biogas Revenue Sensitivity Analysis - 2030 and 2060 Annual Net  
Operating Expenditures (inflated \$)**

	2030 Operating Expenditures		2060 Operating Expenditures	
	Design Concept 1	Design Concept 2	Design Concept 1	Design Concept 2
<b>Operating Expenditures</b>				
Labour Costs	580,000	580,000	1,220,000	1,220,000
Annual Operating Costs (incl. utility and chemicals)	1,133,000	213,000	3,761,000	1,483,000
Additional HVAC/Heating Requirements	60,000	59,000	130,000	127,000
Biogas Upgrading and Processing	487,000	373,000	1,417,000	1,086,000
Maintenance Costs (2% of capital equipment)	481,000	539,000	1,009,000	1,133,000
<b>Annual Operating Expenditures</b>	<b>2,741,000</b>	<b>1,764,000</b>	<b>7,537,000</b>	<b>5,049,000</b>
Biogas Revenue (@ \$0.89/m3)	1,859,000	1,425,000	5,408,000	4,146,000
<b>Net Operating Expenditures</b>	<b>882,000</b>	<b>339,000</b>	<b>2,129,000</b>	<b>903,000</b>

#### 4. Net Financial Impact

The appendix to this report provides the 2030-2060 financial assessment forecast for each alternative design concept. The A-series tables are for Design Concept 1 and the B-series tables are for Design Concept 2. The assessment includes the capital expenditures for each alternative and associated debt financing assumptions and growth-related funding alternatives. Tables with reference numbers 1 through 5 for



each alternative design concept provide the capital funding plan and reserve fund continuity projections. Tables with reference number 6 includes the annual operating budget forecast, inclusive of direct operating expenditures, capital-related debt financing and lifecycle reserve fund contributions, as well as annual operating revenues for biogas fees and growth-related reserve fund contributions.

These tables produce an annual net user fee recovery for the 2030-2060 forecast period. This is the net amount that would have to be funded annually for the Regional Biosolids & Biogas Facility. Tables with reference number 7 in the appendix provides the annual net user fee recovery amount in aggregate and per total loading tonnage.

A net present value of the annual net user fee recovery is provided for each alternative design concept for comparison purposes. The net present value has been calculated by applying a discount rate of 5%, consisted with the cost of capital assumptions. Table 6 below presents the net present value of Design Concepts 1 and 2. The net present value for Design Concept 2 is approximately 4.3% less than Design Concept 1 on this basis.

Table 7 includes the net present value comparison for the sensitivity analysis conducted with the higher biogas revenue assumptions. Under this analysis, the net present value for Design Concept 1 is approximately 1.3% less than Design Concept 2 on this basis.

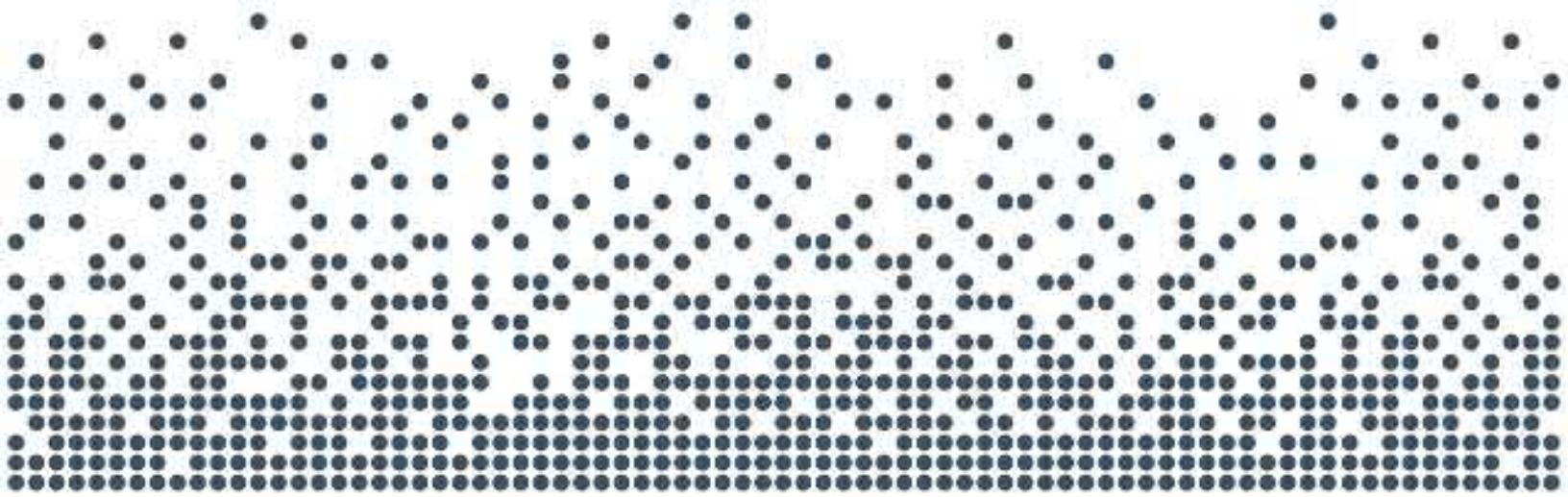
**Table 6**  
**Utilities Kingston**  
**Regional Biosolids & Biogas Facility Alternative Design Concepts**  
**2030-2060 Net Present Value Comparison**

	Design Concept 1	Design Concept 2
<u>Net Present Value (2030-2060)</u>		
Aggregate	\$ 122,645,697	\$ 117,323,603
Per Total Loading Tonnage	\$ 99.68	\$ 95.35



**Table 7**  
**Utilities Kingston**  
**Regional Biosolids & Biogas Facility Alternative Design Concepts**  
**Higher Biogas Revenue Sensitivity Analysis - 2030-2060 Net Present Value**  
**Comparison**

	Design Concept 1	Design Concept 2
<u>Net Present Value (2030-2060)</u>		
Aggregate	\$ 94,435,321	\$ 95,696,682
Per Total Loading Tonnage	76.75	77.78



# **Appendix A**

## **Financial Assessment**

### **Forecast**

**Table A-1**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Total	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Capital Expenditures</b>																
Equipment	24,061,000	24,061,000														
Structural/Architectural	12,903,000	12,903,000														
Siteworks	9,757,000	9,757,000														
Electrical, Instrumentation and Controls	3,485,000	3,485,000														
Mechanical / HVAC	6,325,000	6,325,000														
Construction Allowances, 4%	2,281,000	2,281,000														
Contingency - Estimating, 30%	16,959,000	16,959,000														
Engineering, 20%	11,306,000	11,306,000														
<b>Total Capital Expenditures</b>	<b>87,057,000</b>	<b>87,057,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements	62,756,000	62,756,000														
Growth Related Debenture Requirements	24,301,000	24,301,000														
Operating Contributions	-	-														
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	<b>87,057,000</b>	<b>87,057,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-2**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	62,756,000		5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704
2031	-															
2032	-															
2033	-															
2034	-															
2035	-															
2036	-															
2037	-															
2038	-															
2039	-															
<b>Total Annual Debt Charges</b>	<b>62,756,000</b>	<b>-</b>	<b>5,035,704</b>													

**Table A-3**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	24,301,000		1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975
2031																
2032																
2033																
2034																
2035																
2036																
2037																
2038																
2039																
<b>Total Annual Debt Charges</b>	<b>24,301,000</b>	-	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975

**Table A-4**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	853,369	(0)	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	828,513	879,197	851,005	862,822	936,805	983,054	1,031,476	930,095	974,044	1,020,070	1,068,270	1,118,748	982,873	1,027,376	1,073,894
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	1,723,506	851,005	892,922	936,805	983,054	1,031,476	930,095	974,044	1,020,070	1,068,270	1,118,748	982,873	1,027,376	1,073,894
<b>Closing Balance</b>	<b>828,513</b>	<b>(0)</b>	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	24,856	(0)	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-5**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>-</b>														
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-6**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Operating Budget Forecast**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Expenditures</b>															
<b>Operating Costs</b>															
Labour Costs	580,000	585,000	610,000	625,000	641,000	657,000	673,000	690,000	707,000	725,000	743,000	762,000	781,000	801,000	821,000
Annual Operating Costs (incl. utility and chemicals)	1,133,000	1,187,000	1,243,000	1,300,000	1,358,000	1,422,000	1,487,000	1,553,000	1,619,000	1,688,000	1,759,000	1,833,000	1,909,000	1,983,000	2,061,000
Additional HVAC/Heating Requirements	50,000	62,000	64,000	66,000	68,000	70,000	72,000	74,000	76,000	78,000	80,000	82,000	84,000	86,000	88,000
Biogas Upgrading and Processing	487,000	508,000	527,000	547,000	566,000	591,000	614,000	638,000	661,000	686,000	711,000	738,000	766,000	792,000	820,000
Maintenance Costs (2% of capital equipment)	481,000	483,000	505,000	518,000	531,000	544,000	556,000	572,000	588,000	601,000	618,000	631,000	647,000	663,000	680,000
<b>Sub Total Operating</b>	<b>2,741,000</b>	<b>2,843,000</b>	<b>2,948,000</b>	<b>3,056,000</b>	<b>3,168,000</b>	<b>3,284,000</b>	<b>3,404,000</b>	<b>3,527,000</b>	<b>3,649,000</b>	<b>3,776,000</b>	<b>3,908,000</b>	<b>4,046,000</b>	<b>4,186,000</b>	<b>4,326,000</b>	<b>4,470,000</b>
<b>Capital-Related</b>															
New Growth Related Debt	-	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975
New Non-Growth Related Debt	-	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704
Lifecycle Reserve Contribution (\$)															
<b>Sub Total Capital Related</b>	<b>-</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>
<b>Total Expenditures</b>	<b>2,741,000</b>	<b>9,828,679</b>	<b>9,934,679</b>	<b>10,041,679</b>	<b>10,153,679</b>	<b>10,269,679</b>	<b>10,389,679</b>	<b>10,512,679</b>	<b>10,634,679</b>	<b>10,763,679</b>	<b>10,894,679</b>	<b>11,031,679</b>	<b>11,171,679</b>	<b>11,310,679</b>	<b>11,455,679</b>
<b>Revenues</b>															
Biosgas Revenue (@ \$0.37/m3)	773,000	804,000	836,000	868,000	903,000	938,000	975,000	1,012,000	1,050,000	1,089,000	1,129,000	1,171,000	1,214,000	1,257,000	1,301,000
Contribution from D.C./C.C. Reserve Fund	-	1,723,596	851,005	282,822	926,805	963,054	1,031,478	930,085	974,044	1,020,070	1,088,270	1,118,740	962,073	1,027,376	1,073,094
<b>Total Operating Revenue</b>	<b>773,000</b>	<b>2,527,596</b>	<b>1,687,005</b>	<b>1,761,922</b>	<b>1,838,905</b>	<b>1,921,054</b>	<b>2,006,476</b>	<b>1,942,095</b>	<b>2,024,044</b>	<b>2,108,070</b>	<b>2,197,270</b>	<b>2,289,748</b>	<b>2,196,873</b>	<b>2,284,376</b>	<b>2,374,894</b>
<b>Net User Fee Recovery</b>	<b>1,868,000</b>	<b>7,301,113</b>	<b>8,247,674</b>	<b>8,278,766</b>	<b>8,313,774</b>	<b>8,348,626</b>	<b>8,383,203</b>	<b>8,670,884</b>	<b>8,610,636</b>	<b>8,664,608</b>	<b>8,687,409</b>	<b>8,741,831</b>	<b>8,874,806</b>	<b>8,926,303</b>	<b>8,080,786</b>

**Table A-7**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Net User Fee Recovery	1,868,000	7,301,113	8,247,674	8,278,766	8,313,774	8,348,626	8,383,203	8,670,884	8,610,636	8,664,608	8,687,409	8,741,831	8,874,806	9,026,303	9,080,786
Total Loading Tonnage(TPY)	33,086	33,575	34,054	34,534	35,009	35,481	36,980	36,461	36,893	37,329	37,771	38,218	38,655	39,039	39,427
Net User Fee Recovery per TPY	59.48	217.48	242.12	239.78	237.47	235.29	232.99	235.06	233.46	231.84	230.27	228.74	232.18	231.21	230.32
Net Present Value at Net Discount Rate (5%)	122,645,697														
Net Present Value at Net Discount Rate (6%) per TPY	89.68														

Table A-1  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Capital Budget Forecast  
Inflated\$

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Capital Expenditures</b>																
Equipment																
Structural/Architectural																
Siteworks																
Electrical, Instrumentation and Controls																
Mechanical / HVAC																
Construction Allowances, 4%																
Contingency - Estimating, 30%																
Engineering, 20%																
<b>Total Capital Expenditures</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements																
Growth Related Debenture Requirements																
Operating Contributions																
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A-2  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Schedule of Non-Growth Related Debenture Repayments  
Inflated\$

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	-	-	-	-	-	-	-	-	-	-

Table A-3  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Schedule of Growth Related Debenture Repayments  
Inflated\$

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>-</b>									

Table A-4  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Development Charge/Capital Charge Reserve Fund Continuity  
Inflated\$

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	1,122,518	1,173,343	1,168,442	1,220,778	1,275,460	1,332,590	1,392,280	1,454,843	1,519,799	1,587,874	1,658,988	1,733,307	1,810,946	1,892,061	1,976,811	2,065,356
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	1,122,518	1,173,343	1,168,442	1,220,778	1,275,460	1,332,590	1,392,280	1,454,843	1,519,799	1,587,874	1,658,988	1,733,307	1,810,946	1,892,061	1,976,811	2,065,356
<b>Closing Balance</b>	<b>-</b>															
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A-5  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Lifecycle Reserve Fund Continuity  
Inflated\$

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060		
Opening Balance	-	-	-	-	-	-	-	-	1,751,500	3,555,545	5,413,711	7,327,622	9,205,951	11,329,419	13,420,802	15,574,925	17,783,873	
Transfer from Operating	-	-	-	-	-	-	-	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485		
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Closing Balance</b>	<b>-</b>	<b>1,700,485</b>	<b>3,451,985</b>	<b>5,258,030</b>	<b>7,114,198</b>	<b>9,028,107</b>	<b>10,999,438</b>	<b>13,029,904</b>	<b>15,121,287</b>	<b>17,275,411</b>	<b>19,494,158</b>							
Interest	-	-	-	-	-	-	-	-	51,015	103,580	157,881	213,428	270,843	329,983	390,697	453,639	518,262	584,625

Table A-6  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Operating Budget Forecast  
Inflated\$

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Expenditures</b>																
<b>Operating Costs</b>																
Labour Costs	842,000	883,600	885,000	907,000	930,000	953,000	977,000	1,001,000	1,026,000	1,052,000	1,078,000	1,105,000	1,133,000	1,181,000	1,190,000	1,220,000
Annual Operating Costs (incl. utility and chemicals)	2,142,000	2,226,000	2,312,000	2,401,000	2,493,000	2,589,000	2,687,000	2,790,000	2,897,000	3,007,000	3,122,000	3,241,000	3,363,000	3,491,000	3,624,000	3,761,000
Additional HVAC/Heating Requirements	90,000	92,000	94,000	96,000	98,000	100,000	103,000	106,000	112,000	115,000	118,000	121,000	124,000	127,000	130,000	
Biogas Upgrading and Processing	849,000	878,000	909,000	941,000	973,000	1,007,000	1,042,000	1,078,000	1,116,000	1,154,000	1,195,000	1,236,000	1,279,000	1,323,000	1,369,000	1,417,000
Maintenance Costs (2% of capital equipment)	697,000	714,000	732,000	750,000	769,000	789,000	808,000	828,000	849,000	870,000	892,000	914,000	937,000	960,000	984,000	1,009,000
<b>Sub Total Operating</b>	<b>4,620,000</b>	<b>4,773,000</b>	<b>4,932,000</b>	<b>5,096,000</b>	<b>5,263,000</b>	<b>5,436,000</b>	<b>5,617,000</b>	<b>5,803,000</b>	<b>5,997,000</b>	<b>6,195,000</b>	<b>6,402,000</b>	<b>6,614,000</b>	<b>6,833,000</b>	<b>7,058,000</b>	<b>7,284,000</b>	<b>7,537,000</b>
<b>Capital-Related</b>																
New Growth Related Debt	1,049,975	1,049,975	1,049,975	1,049,975	1,049,975	1,049,975	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Contribution (\$)							1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485
<b>Sub Total Capital Related</b>	<b>6,985,678</b>	<b>6,985,678</b>	<b>6,985,678</b>	<b>6,985,678</b>	<b>6,985,678</b>	<b>6,985,678</b>	<b>1,700,485</b>									
<b>Total Expenditures</b>	<b>11,605,678</b>	<b>11,758,678</b>	<b>11,917,678</b>	<b>12,080,678</b>	<b>12,248,678</b>	<b>12,421,678</b>	<b>7,317,485</b>	<b>7,503,485</b>	<b>7,697,485</b>	<b>7,895,485</b>	<b>8,102,485</b>	<b>8,314,485</b>	<b>8,533,485</b>	<b>8,759,485</b>	<b>8,994,485</b>	<b>9,237,485</b>
<b>Revenues</b>																
Biogas Revenue (@ \$0.37/m3)	1,347,000	1,394,000	1,443,000	1,493,000	1,545,000	1,599,000	1,654,000	1,712,000	1,771,000	1,832,000	1,896,000	1,962,000	2,030,000	2,100,000	2,173,000	2,248,000
Contribution from D.C./C. Reserve Fund	1,122,518	1,173,343	1,168,442	1,220,779	1,275,460	1,332,590	1,392,290	1,451,843	1,519,799	1,587,874	1,658,988	1,735,307	1,810,946	1,892,061	1,978,811	2,065,356
<b>Total Operating Revenue</b>	<b>2,469,518</b>	<b>2,567,343</b>	<b>2,611,442</b>	<b>2,713,779</b>	<b>2,820,460</b>	<b>2,931,590</b>	<b>3,046,280</b>	<b>3,168,843</b>	<b>3,290,799</b>	<b>3,419,874</b>	<b>3,554,998</b>	<b>3,695,307</b>	<b>3,840,946</b>	<b>3,992,061</b>	<b>4,148,811</b>	<b>4,313,356</b>
<b>Net User Fee Recovery</b>	<b>8,136,161</b>	<b>8,191,336</b>	<b>8,306,237</b>	<b>8,366,900</b>	<b>8,428,218</b>	<b>8,490,058</b>	<b>4,271,206</b>	<b>4,336,843</b>	<b>4,406,686</b>	<b>4,476,612</b>	<b>4,547,488</b>	<b>4,619,178</b>	<b>4,682,640</b>	<b>4,757,424</b>	<b>4,844,676</b>	<b>4,924,130</b>

Table A-7  
Utilities Kingston  
Biogas Biosolids AD Facility - Design Concept 1  
Net Wastewater Billing Recovery  
Inflated\$

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Net User Fee Recovery	9,136,161	9,191,336	9,306,237	9,366,900	9,428,218	9,490,058	4,271,206	4,336,843	4,406,686	4,476,612	4,547,488	4,619,178	4,692,540	4,767,424	4,844,676	4,924,130
Total Loading Tonnage(TPY)	39,818	40,214	40,609	40,993	41,381	41,773	42,168	42,567	42,960	43,375	43,786	44,201	44,619	45,041	45,467	46,897
<b>Net User Fee Recovery per TPY</b>	<b>229.45</b>	<b>228.58</b>	<b>229.17</b>	<b>228.50</b>	<b>227.84</b>	<b>227.18</b>	<b>101.29</b>	<b>101.88</b>	<b>102.55</b>	<b>103.18</b>	<b>103.88</b>	<b>104.51</b>	<b>105.17</b>	<b>105.85</b>	<b>106.55</b>	<b>107.29</b>
<b>Net Present Value at Net Discount Rate (5%)</b>																
<b>Net Present Value at Net Discount Rate (6%) per TPY</b>																

**Table B-1**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Total	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Capital Expenditures</b>																
Equipment	26,962,000	26,962,000														
Structural/Architectural	17,867,000	17,867,000														
Siteworks	11,344,000	11,344,000														
Electrical, Instrumentation and Controls	4,518,000	4,518,000														
Mechanical / HVAC	7,099,000	7,099,000														
Construction Allowances, 4%	2,712,000	2,712,000														
Contingency - Estimating, 30%	20,337,000	20,337,000														
Engineering, 20%	13,058,000	13,058,000														
<b>Total Capital Expenditures</b>	<b>104,387,000</b>	<b>104,387,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements	75,257,000	75,257,000														
Growth Related Debenture Requirements	29,140,000	29,140,000														
Operating Contributions	-	-														
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	<b>104,387,000</b>	<b>104,387,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-2**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	75,257,000		6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816
2031	-															
2032	-															
2033	-															
2034	-															
2035	-															
2036	-															
2037	-															
2038	-															
2039	-															
<b>Total Annual Debt Charges</b>	<b>75,257,000</b>	<b>-</b>	<b>6,038,816</b>													

**Table B-3**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	29,140,000		2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269
2031																
2032	-															
2033	-															
2034	-															
2035	-															
2036	-															
2037	-															
2038	-															
2039	-															
<b>Total Annual Debt Charges</b>	<b>29,140,000</b>	<b>-</b>	<b>2,338,269</b>													

**Table B-4**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	
Opening Balance		1,023,298	0													
Charge Proceeds	893,493	1,043,478	1,020,483	1,070,728	1,123,488	1,178,807	1,236,871	1,115,303	1,168,003	1,223,194	1,280,932	1,341,521	1,178,590	1,231,855	1,287,735	
Transfer to Capital																
Transfer to Operating		2,000,775	1,020,484	1,070,728	1,123,488	1,178,807	1,236,871	1,115,303	1,168,003	1,223,194	1,280,932	1,341,521	1,178,590	1,231,855	1,287,735	
<b>Closing Balance</b>	<b>893,493</b>	<b>0</b>	<b>-</b>													
Interest	29,805	0	-	-	-	-	-	-	-	-	-	-	-	-	-	

**Table B-5**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>-</b>														
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-6**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Operating Budget Forecast**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Expenditures</b>															
<b>Operating Costs</b>															
Labour Costs	580,000	595,000	610,000	625,000	641,000	657,000	673,000	690,000	707,000	725,000	743,000	762,000	781,000	801,000	821,000
Annual Operating Costs (incl. utility and chemicals)	213,000	229,000	246,000	263,000	282,000	303,000	324,000	347,000	371,000	396,000	423,000	452,000	483,000	514,000	548,000
Additional HVAC/Heating Requirements	59,000	60,000	62,000	64,000	66,000	68,000	70,000	72,000	74,000	76,000	78,000	80,000	82,000	84,000	86,000
Biogas Upgrading and Processing	373,000	388,000	404,000	420,000	436,000	453,000	471,000	489,000	507,000	526,000	545,000	566,000	587,000	607,000	628,000
Maintenance Costs (2% of capital equipment)	539,000	552,000	568,000	580,000	595,000	610,000	625,000	641,000	657,000	673,000	690,000	707,000	725,000	743,000	762,000
<b>Sub Total Operating</b>	<b>1,764,000</b>	<b>1,824,000</b>	<b>1,888,000</b>	<b>1,952,000</b>	<b>2,020,000</b>	<b>2,091,000</b>	<b>2,163,000</b>	<b>2,238,000</b>	<b>2,316,000</b>	<b>2,396,000</b>	<b>2,478,000</b>	<b>2,567,000</b>	<b>2,658,000</b>	<b>2,749,000</b>	<b>2,845,000</b>
<b>Capital-Related</b>															
New Growth Related Debt	-	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269
New Non-Growth Related Debt	-	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816
Lifecycle Reserve Contribution (\$)															
<b>Sub Total Capital Related</b>	<b>-</b>	<b>8,377,085</b>													
<b>Total Expenditures</b>	<b>1,764,000</b>	<b>10,201,085</b>	<b>10,265,085</b>	<b>10,329,085</b>	<b>10,397,085</b>	<b>10,468,085</b>	<b>10,540,085</b>	<b>10,616,085</b>	<b>10,693,085</b>	<b>10,773,085</b>	<b>10,856,085</b>	<b>10,944,085</b>	<b>11,035,085</b>	<b>11,128,085</b>	<b>11,222,085</b>
<b>Revenues</b>															
Biosgas Revenue (@ \$0.37/m3)	502,000	616,000	641,000	666,000	692,000	719,000	747,000	776,000	805,000	835,000	866,000	898,000	931,000	964,000	998,000
Contribution from D.C./C.C. Reserve Fund	-	2,068,775	1,020,484	1,070,726	1,123,488	1,178,807	1,236,871	1,115,303	1,188,003	1,223,194	1,260,892	1,311,521	1,378,590	1,431,955	1,267,735
<b>Total Operating Revenue</b>	<b>692,000</b>	<b>2,682,775</b>	<b>1,661,484</b>	<b>1,738,728</b>	<b>1,815,488</b>	<b>1,897,807</b>	<b>1,983,871</b>	<b>1,891,303</b>	<b>1,973,003</b>	<b>2,058,194</b>	<b>2,146,992</b>	<b>2,239,521</b>	<b>2,108,590</b>	<b>2,195,955</b>	<b>2,285,735</b>
<b>Net User Fee Recovery</b>	<b>1,172,000</b>	<b>7,518,310</b>	<b>8,603,622</b>	<b>8,682,367</b>	<b>8,581,817</b>	<b>8,670,278</b>	<b>8,666,216</b>	<b>8,724,792</b>	<b>8,720,082</b>	<b>8,714,892</b>	<b>8,709,093</b>	<b>8,704,564</b>	<b>8,704,664</b>	<b>8,826,486</b>	<b>8,830,131</b>

**Table B-7**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Net User Fee Recovery</b>	<b>1,172,000</b>	<b>7,518,310</b>	<b>8,603,622</b>	<b>8,682,367</b>	<b>8,581,817</b>	<b>8,570,278</b>	<b>8,556,216</b>	<b>8,724,792</b>	<b>8,720,082</b>	<b>8,714,892</b>	<b>8,709,093</b>	<b>8,704,564</b>	<b>8,925,495</b>	<b>8,930,131</b>	<b>8,936,350</b>
<b>Total Loading Tonnage(TPY)</b>	<b>33,086</b>	<b>33,575</b>	<b>34,064</b>	<b>34,534</b>	<b>36,009</b>	<b>36,491</b>	<b>36,980</b>	<b>36,461</b>	<b>36,893</b>	<b>37,329</b>	<b>37,771</b>	<b>38,218</b>	<b>38,655</b>	<b>39,039</b>	<b>39,427</b>
<b>Net User Fee Recovery per TPY</b>	<b>35.42</b>	<b>225.93</b>	<b>252.57</b>	<b>248.81</b>	<b>245.12</b>	<b>241.47</b>	<b>237.80</b>	<b>239.29</b>	<b>238.38</b>	<b>233.46</b>	<b>230.57</b>	<b>227.78</b>	<b>230.90</b>	<b>228.75</b>	<b>228.88</b>
<b>Net Present Value at Net Discount Rate (5%)</b>	<b>117,323,603</b>														
<b>Net Present Value at Net Discount Rate (6%) per TPY</b>	<b>95.36</b>														

**Table B-1**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Capital Expenditures</b>																
Equipment																
Structural/Architectural																
Siteworks																
Electrical, Instrumentation and Controls																
Mechanical / HVAC																
Construction Allowances, 4%																
Contingency - Estimating, 30%																
Engineering, 20%																
<b>Total Capital Expenditures</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements																
Growth Related Debenture Requirements																
Operating Contributions																
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-2**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	6,038,818	6,038,818	6,038,818	6,038,818	6,038,818	6,038,818	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>6,038,818</b>	<b>6,038,818</b>	<b>6,038,818</b>	<b>6,038,818</b>	<b>6,038,818</b>	<b>6,038,818</b>	<b>-</b>									

**Table B-3**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>2,338,269</b>	<b>2,338,269</b>	<b>2,338,269</b>	<b>2,338,269</b>	<b>2,338,269</b>	<b>2,338,269</b>	<b>-</b>									

**Table B-4**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	1,346,042	1,406,888	1,401,111	1,463,870	1,529,430	1,587,946	1,648,521	1,744,302	1,822,433	1,904,083	1,989,350	2,078,457	2,171,566	2,268,823	2,370,448	2,478,825
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	1,346,042	1,406,888	1,401,111	1,463,870	1,529,430	1,587,946	1,648,521	1,744,302	1,822,433	1,904,083	1,989,350	2,078,457	2,171,566	2,268,823	2,370,448	2,478,825
<b>Closing Balance</b>	<b>-</b>															
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-5**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	
Opening Balance	-	-	-	-	-	-	-	-	2,100,298	4,263,805	6,401,811	8,786,883	11,150,768	13,585,587	16,093,453	18,678,554	21,337,149
Transfer from Operating	-	-	-	-	-	-	-	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Closing Balance</b>	<b>-</b>	<b>2,039,124</b>	<b>4,139,422</b>	<b>6,302,729</b>	<b>8,530,935</b>	<b>10,825,987</b>	<b>13,169,891</b>	<b>15,824,711</b>	<b>18,132,577</b>	<b>20,715,878</b>	<b>23,378,273</b>						
Interest	-	-	-	-	-	-	-	81,174	124,183	169,082	205,928	242,700	285,697	326,741	363,977	401,470	439,268

**Table B-6**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Operating Budget Forecast**  
**Inflated\$**

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Expenditures</b>																
<b>Operating Costs</b>																
Labour Costs	842,000	883,600	885,000	907,000	930,000	953,000	977,000	1,001,000	1,026,000	1,052,000	1,078,000	1,105,000	1,133,000	1,181,000	1,190,000	1,220,000
Annual Operating Costs (incl. utility and chemicals)	563,000	621,000	652,000	704,000	749,000	797,000	849,000	903,000	961,000	1,023,000	1,088,000	1,158,000	1,232,000	1,311,000	1,395,000	1,403,000
Additional HVAC/Heating Requirements	88,000	90,000	92,000	94,000	96,000	98,000	100,000	103,000	106,000	109,000	112,000	115,000	118,000	121,000	124,000	127,000
Biosolids Upgrading and Processing	651,000	673,000	697,000	721,000	748,000	772,000	799,000	827,000	855,000	882,000	916,000	948,000	980,000	1,014,000	1,050,000	1,086,000
Maintenance Costs (2% of capital equipment)	781,000	801,000	821,000	842,000	863,000	885,000	907,000	930,000	953,000	977,000	1,001,000	1,026,000	1,052,000	1,078,000	1,105,000	1,133,000
<b>Sub Total Operating</b>	<b>2,945,000</b>	<b>3,048,000</b>	<b>3,167,000</b>	<b>3,268,000</b>	<b>3,384,000</b>	<b>3,606,000</b>	<b>3,632,000</b>	<b>3,764,000</b>	<b>3,901,000</b>	<b>4,046,000</b>	<b>4,195,000</b>	<b>4,352,000</b>	<b>4,515,000</b>	<b>4,686,000</b>	<b>4,864,000</b>	<b>5,049,000</b>
<b>Capital-Related</b>																
New Growth Related Debt	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	-	-	-	-	-	-	-	-	-	
New Non-Growth Related Debt	6,038,818	6,038,818	6,038,818	6,038,818	6,038,818	6,038,818	-	-	-	-	-	-	-	-	-	
Lifecycle Reserve Contribution (\$)							2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124
<b>Sub Total Capital Related</b>	<b>8,377,085</b>	<b>8,377,085</b>	<b>8,377,085</b>	<b>8,377,085</b>	<b>8,377,085</b>	<b>8,377,085</b>	<b>2,039,124</b>									
<b>Total Expenditures</b>	<b>11,322,085</b>	<b>11,425,085</b>	<b>11,534,085</b>	<b>11,645,085</b>	<b>11,761,085</b>	<b>11,882,085</b>	<b>5,671,124</b>	<b>5,803,124</b>	<b>5,940,124</b>	<b>6,085,124</b>	<b>6,234,124</b>	<b>6,381,124</b>	<b>6,534,124</b>	<b>6,724,124</b>	<b>6,903,124</b>	<b>7,088,124</b>
<b>Revenues</b>																
Biosolids Revenue (@ \$0.37/m3)	1,063,000	1,066,000	1,106,000	1,145,000	1,185,000	1,226,000	1,268,000	1,312,000	1,368,000	1,405,000	1,454,000	1,504,000	1,556,000	1,610,000	1,666,000	1,724,000
Contribution from D.C./C. Reserve Fund	1,346,042	1,406,988	1,401,111	1,483,870	1,529,139	1,587,946	1,688,521	1,744,302	1,822,433	1,904,083	1,989,350	2,078,457	2,171,555	2,268,823	2,370,448	2,478,825
<b>Total Operating Revenue</b>	<b>2,379,042</b>	<b>2,475,988</b>	<b>2,507,111</b>	<b>2,608,870</b>	<b>2,714,438</b>	<b>2,823,946</b>	<b>2,837,521</b>	<b>3,056,302</b>	<b>3,180,423</b>	<b>3,308,083</b>	<b>3,443,350</b>	<b>3,582,457</b>	<b>3,727,555</b>	<b>3,878,823</b>	<b>4,036,448</b>	<b>4,200,825</b>
<b>Net User Fee Recovery</b>	<b>8,943,044</b>	<b>8,949,087</b>	<b>8,026,874</b>	<b>8,036,216</b>	<b>8,046,646</b>	<b>9,058,139</b>	<b>2,733,603</b>	<b>2,746,822</b>	<b>2,768,681</b>	<b>2,776,061</b>	<b>2,790,774</b>	<b>2,808,667</b>	<b>2,826,669</b>	<b>2,846,391</b>	<b>2,866,676</b>	<b>2,887,489</b>

**Table B-7**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Net User Fee Recovery	8,943,044	8,949,087	9,026,974	9,036,216	9,046,646	9,058,139	2,733,603	2,746,822	2,768,681	2,776,061	2,790,774	2,808,667	2,826,669	2,845,391	2,866,676	2,887,489
Total Loading Tonnage(TPY)	39,818	40,214	40,609	40,993	41,381	41,773	42,168	42,567	42,969	43,375	43,786	44,201	44,619	45,041	45,467	46,897
<b>Net User Fee Recovery per TPY</b>	<b>224.80</b>	<b>222.54</b>	<b>222.29</b>	<b>220.49</b>	<b>218.62</b>	<b>216.84</b>	<b>84.83</b>	<b>84.53</b>	<b>84.22</b>	<b>84.00</b>	<b>83.74</b>	<b>83.54</b>	<b>83.35</b>	<b>83.17</b>	<b>83.05</b>	<b>82.91</b>
<b>Net Present Value at Net Discount Rate (5%)</b>																
<b>Net Present Value at Net Discount Rate (6%) per TPY</b>																

**Table A-1 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Total	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Capital Expenditures</b>																
Equipment	24,061,000	24,061,000														
Structural/Architectural	12,903,000	12,903,000														
Siteworks	9,757,000	9,757,000														
Electrical, Instrumentation and Controls	3,485,000	3,485,000														
Mechanical / HVAC	6,325,000	6,325,000														
Construction Allowances, 4%	2,281,000	2,281,000														
Contingency - Estimating, 30%	16,959,000	16,959,000														
Engineering, 20%	11,306,000	11,306,000														
<b>Total Capital Expenditures</b>	<b>87,057,000</b>	<b>87,057,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements	62,756,000	62,756,000														
Growth Related Debenture Requirements	24,301,000	24,301,000														
Operating Contributions	-	-														
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	<b>87,057,000</b>	<b>87,057,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-2 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	62,756,000		5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704
2031	-															
2032	-															
2033	-															
2034	-															
2035	-															
2036	-															
2037	-															
2038	-															
2039	-															
<b>Total Annual Debt Charges</b>	<b>62,756,000</b>	<b>-</b>	<b>5,035,704</b>													

**Table A-3 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	24,301,000		1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975
2031																
2032																
2033																
2034																
2035																
2036																
2037																
2038																
2039																
<b>Total Annual Debt Charges</b>	<b>24,301,000</b>	-	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975

**Table A-4 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	853,369	(0)	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	828,513	879,197	851,005	862,822	936,805	983,054	1,031,476	930,095	974,044	1,020,070	1,068,270	1,118,748	982,873	1,027,376	1,073,894
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	1,723,506	851,005	892,822	936,805	983,054	1,031,476	930,095	974,044	1,020,070	1,068,270	1,118,748	982,873	1,027,376	1,073,894
<b>Closing Balance</b>	<b>828,513</b>	<b>(0)</b>	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	24,856	(0)	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-5 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>-</b>														
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-6 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Operating Budget Forecast**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Expenditures</b>															
<b>Operating Costs</b>															
Labour Costs	580,000	585,000	610,000	625,000	641,000	657,000	673,000	690,000	707,000	725,000	743,000	762,000	781,000	801,000	821,000
Annual Operating Costs (incl. utility and chemicals)	1,133,000	1,187,000	1,243,000	1,300,000	1,358,000	1,422,000	1,487,000	1,553,000	1,619,000	1,688,000	1,759,000	1,833,000	1,909,000	1,983,000	2,061,000
Additional HVAC/Heating Requirements	50,000	62,000	64,000	66,000	68,000	70,000	72,000	74,000	76,000	78,000	80,000	82,000	84,000	86,000	88,000
Biogas Upgrading and Processing	487,000	508,000	527,000	547,000	566,000	591,000	614,000	638,000	661,000	686,000	711,000	738,000	766,000	792,000	820,000
Maintenance Costs (2% of capital equipment)	481,000	483,000	505,000	518,000	531,000	544,000	556,000	572,000	588,000	601,000	618,000	631,000	647,000	663,000	680,000
<b>Sub Total Operating</b>	<b>2,741,000</b>	<b>2,843,000</b>	<b>2,948,000</b>	<b>3,056,000</b>	<b>3,168,000</b>	<b>3,284,000</b>	<b>3,404,000</b>	<b>3,527,000</b>	<b>3,649,000</b>	<b>3,776,000</b>	<b>3,908,000</b>	<b>4,046,000</b>	<b>4,186,000</b>	<b>4,326,000</b>	<b>4,470,000</b>
<b>Capital-Related</b>															
New Growth Related Debt	-	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975
New Non-Growth Related Debt	-	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704
Lifecycle Reserve Contribution (\$)															
<b>Sub Total Capital Related</b>	<b>-</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>	<b>6,985,679</b>
<b>Total Expenditures</b>	<b>2,741,000</b>	<b>9,828,679</b>	<b>9,934,679</b>	<b>10,041,679</b>	<b>10,153,679</b>	<b>10,269,679</b>	<b>10,389,679</b>	<b>10,512,679</b>	<b>10,634,679</b>	<b>10,763,679</b>	<b>10,894,679</b>	<b>11,031,679</b>	<b>11,171,679</b>	<b>11,310,679</b>	<b>11,455,679</b>
<b>Revenues</b>															
Biogas Revenue (@ \$0.80/m3)	1,850,000	1,833,000	2,011,000	2,089,000	2,171,000	2,256,000	2,344,000	2,435,000	2,525,000	2,613,000	2,710,000	2,817,000	2,921,000	3,023,000	3,130,000
Contribution from D.C./C.C. Reserve Fund	-	1,723,596	851,005	882,822	906,805	963,054	1,031,478	930,085	974,044	1,020,070	1,088,270	1,118,740	962,073	1,027,376	1,073,094
<b>Total Operating Revenue</b>	<b>1,859,000</b>	<b>3,656,596</b>	<b>2,882,005</b>	<b>2,981,922</b>	<b>3,107,905</b>	<b>3,239,064</b>	<b>3,375,476</b>	<b>3,365,095</b>	<b>3,499,044</b>	<b>3,639,070</b>	<b>3,784,270</b>	<b>3,935,748</b>	<b>3,935,873</b>	<b>4,050,376</b>	<b>4,203,894</b>
<b>Net User Fee Recovery</b>	<b>882,000</b>	<b>6,172,113</b>	<b>7,072,674</b>	<b>7,068,766</b>	<b>7,045,774</b>	<b>7,030,626</b>	<b>7,014,203</b>	<b>7,147,884</b>	<b>7,135,636</b>	<b>7,124,608</b>	<b>7,110,409</b>	<b>7,095,831</b>	<b>7,267,806</b>	<b>7,280,303</b>	<b>7,261,786</b>

**Table A-7 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 1**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Net User Fee Recovery</b>	<b>882,000</b>	<b>6,172,113</b>	<b>7,072,674</b>	<b>7,068,766</b>	<b>7,045,774</b>	<b>7,030,626</b>	<b>7,014,203</b>	<b>7,147,884</b>	<b>7,135,636</b>	<b>7,124,609</b>	<b>7,110,409</b>	<b>7,095,831</b>	<b>7,267,806</b>	<b>7,280,303</b>	<b>7,261,786</b>
<b>Total Loading Tonnage(TPY)</b>	<b>33,086</b>	<b>33,575</b>	<b>34,064</b>	<b>34,534</b>	<b>36,009</b>	<b>36,491</b>	<b>36,980</b>	<b>36,461</b>	<b>36,893</b>	<b>37,329</b>	<b>37,771</b>	<b>38,218</b>	<b>38,655</b>	<b>39,099</b>	<b>39,427</b>
<b>Net User Fee Recovery per TPY</b>	<b>26.88</b>	<b>185.83</b>	<b>207.63</b>	<b>204.43</b>	<b>201.25</b>	<b>198.09</b>	<b>194.95</b>	<b>196.03</b>	<b>193.42</b>	<b>190.86</b>	<b>188.25</b>	<b>185.87</b>	<b>188.02</b>	<b>185.98</b>	<b>183.93</b>
<b>Net Present Value at Net Discount Rate (5%)</b>	<b>94,435,321</b>														
<b>Net Present Value at Net Discount Rate (6%) per TPY</b>	<b>76.76</b>														

**Table A-1 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Capital Expenditures</b>																
Equipment																
Structural/Architectural																
Siteworks																
Electrical, Instrumentation and Controls																
Mechanical / HVAC																
Construction Allowances, 4%																
Contingency - Estimating, 30%																
Engineering, 20%																
<b>Total Capital Expenditures</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements																
Growth Related Debenture Requirements																
Operating Contributions																
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-2 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>5,035,704</b>	<b>5,035,704</b>	<b>5,035,704</b>	<b>5,035,704</b>	<b>5,035,704</b>	<b>5,035,704</b>	<b>-</b>									

**Table A-3 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	1,949,975	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>1,949,975</b>	<b>-</b>									

**Table A-4 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	1,122,518	1,173,343	1,168,442	1,220,778	1,275,460	1,332,590	1,392,280	1,454,843	1,519,799	1,587,874	1,658,988	1,733,307	1,810,946	1,892,061	1,976,811	2,065,356
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	1,122,518	1,173,343	1,168,442	1,220,778	1,275,460	1,332,590	1,392,280	1,454,843	1,519,799	1,587,874	1,658,988	1,733,307	1,810,946	1,892,061	1,976,811	2,065,356
<b>Closing Balance</b>	<b>-</b>															
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table A-6 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	
Opening Balance	-	-	-	-	-	-	-	-	1,751,500	3,665,545	5,413,711	7,327,622	9,205,951	11,329,419	13,420,802	15,574,925	17,783,873
Transfer from Operating	-	-	-	-	-	-	-	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Closing Balance</b>	<b>-</b>	<b>1,700,485</b>	<b>3,451,985</b>	<b>5,258,030</b>	<b>7,114,198</b>	<b>9,028,107</b>	<b>10,999,438</b>	<b>13,029,904</b>	<b>15,121,287</b>	<b>17,275,411</b>	<b>19,494,158</b>						
Interest	-	-	-	-	-	-	-	51,015	103,580	157,881	213,428	270,843	329,983	390,897	453,639	518,262	584,625

**Table A-6 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Operating Budget Forecast**  
**Inflated\$**

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Expenditures</b>																
Operating Costs																
Labour Costs	842,000	883,600	885,000	907,000	930,000	953,000	977,000	1,001,000	1,026,000	1,052,000	1,078,000	1,105,000	1,133,000	1,181,000	1,190,000	1,220,000
Annual Operating Costs (incl. utility and chemicals)	2,142,000	2,226,000	2,312,000	2,401,000	2,493,000	2,589,000	2,687,000	2,790,000	2,897,000	3,007,000	3,122,000	3,241,000	3,363,000	3,491,000	3,624,000	3,761,000
Additional HVAC/Heating Requirements	90,000	92,000	94,000	96,000	98,000	100,000	103,000	106,000	112,000	115,000	118,000	121,000	124,000	127,000	130,000	
Biosolids Upgrading and Processing	849,000	878,000	909,000	941,000	973,000	1,007,000	1,042,000	1,078,000	1,116,000	1,154,000	1,195,000	1,236,000	1,279,000	1,323,000	1,369,000	1,417,000
Maintenance Costs (2% of capital equipment)	697,000	714,000	732,000	750,000	769,000	789,000	808,000	828,000	849,000	870,000	892,000	914,000	937,000	960,000	984,000	1,009,000
<b>Sub Total Operating</b>	<b>4,620,000</b>	<b>4,773,000</b>	<b>4,932,000</b>	<b>5,098,000</b>	<b>5,263,000</b>	<b>5,436,000</b>	<b>5,617,000</b>	<b>5,803,000</b>	<b>5,997,000</b>	<b>6,198,000</b>	<b>6,402,000</b>	<b>6,614,000</b>	<b>6,833,000</b>	<b>7,068,000</b>	<b>7,284,000</b>	<b>7,637,000</b>
Capital-Related																
New Growth Related Debt	1,049,975	1,049,975	1,049,975	1,049,975	1,049,975	1,049,975	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	5,035,704	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Contribution (\$)							1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485	1,700,485
<b>Sub Total Capital Related</b>	<b>6,986,678</b>	<b>6,986,678</b>	<b>6,986,678</b>	<b>6,986,678</b>	<b>6,986,678</b>	<b>6,986,678</b>	<b>1,700,485</b>									
<b>Total Expenditures</b>	<b>11,606,678</b>	<b>11,758,678</b>	<b>11,917,678</b>	<b>12,080,678</b>	<b>12,248,678</b>	<b>12,421,678</b>	<b>7,317,685</b>	<b>7,503,685</b>	<b>7,697,685</b>	<b>7,895,685</b>	<b>8,102,685</b>	<b>8,314,685</b>	<b>8,533,685</b>	<b>8,759,685</b>	<b>8,984,685</b>	<b>9,237,685</b>
Revenues																
Biosolids Revenue (@ \$0.80/m³)	3,240,000	3,354,000	3,471,000	3,592,000	3,718,000	3,845,000	3,973,000	4,117,000	4,260,000	4,407,000	4,560,000	4,719,000	4,882,000	5,052,000	5,227,000	5,408,000
Contribution from D.C./C. Reserve Fund	1,122,518	1,173,343	1,168,442	1,220,779	1,275,460	1,332,590	1,392,280	1,451,843	1,519,799	1,587,874	1,656,986	1,733,307	1,810,946	1,892,061	1,978,811	2,065,358
<b>Total Operating Revenue</b>	<b>4,362,618</b>	<b>4,527,343</b>	<b>4,639,442</b>	<b>4,812,779</b>	<b>4,991,460</b>	<b>5,177,590</b>	<b>5,371,280</b>	<b>5,571,843</b>	<b>5,779,799</b>	<b>5,984,874</b>	<b>6,213,988</b>	<b>6,452,307</b>	<b>6,692,946</b>	<b>6,944,061</b>	<b>7,203,811</b>	<b>7,473,356</b>
<b>Net User Fee Recovery</b>	<b>7,243,161</b>	<b>7,231,336</b>	<b>7,276,237</b>	<b>7,267,900</b>	<b>7,267,219</b>	<b>7,264,068</b>	<b>7,265,206</b>	<b>7,301,843</b>	<b>7,317,686</b>	<b>7,390,612</b>	<b>7,683,488</b>	<b>7,862,178</b>	<b>8,040,640</b>	<b>8,164,424</b>	<b>8,290,676</b>	<b>8,764,130</b>

**Table A-7 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 1**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Net User Fee Recovery	7,243,161	7,231,336	7,276,237	7,267,900	7,257,219	7,244,068	7,166,200	7,021,843	6,917,686	6,900,612	6,853,488	6,852,178	6,840,540	6,815,424	6,790,575	6,764,130
Total Loading Tonnage(TPY)	39,818	40,214	40,609	40,993	41,381	41,773	42,168	42,567	42,969	43,375	43,786	44,201	44,619	45,041	45,467	46,897
Net User Fee Recovery per TPY	181.91	179.82	179.23	177.30	175.38	173.42	171.15	169.58	168.83	168.22	167.02	166.23	165.61	165.11	164.64	164.44
<b>Net Present Value at Net Discount Rate (5%)</b>																
<b>Net Present Value at Net Discount Rate (6%) per TPY</b>																

**Table B-1 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Total	Capital Budget Forecast													
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
<b>Capital Expenditures</b>															
Equipment	26,962,000	26,962,000													
Structural/Architectural	17,867,000	17,867,000													
Siteworks	11,344,000	11,344,000													
Electrical, Instrumentation and Controls	4,518,000	4,518,000													
Mechanical / HVAC	7,099,000	7,099,000													
Construction Allowances, 4%	2,712,000	2,712,000													
Contingency - Estimating, 30%	20,337,000	20,337,000													
Engineering, 20%	13,558,000	13,558,000													
<b>Total Capital Expenditures</b>	<b>104,397,000</b>	<b>104,397,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>															
Provincial/Federal Grants	-														
Non-Growth Related Debenture Requirements	75,257,000	75,257,000													
Growth Related Debenture Requirements	29,140,000	29,140,000													
Operating Contributions	-														
Lifecycle Reserve Fund	-														
<b>Total Capital Financing</b>	<b>104,397,000</b>	<b>104,397,000</b>	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-2 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	Schedule of Non-Growth Related Debenture Repayments													
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
2030	75,257,000	-	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>75,257,000</b>	<b>-</b>	<b>6,038,816</b>												

**Table B-3 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Principal (Inflated)	Inflated\$														
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
2030	29,140,000		2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269
2031	-															
2032	-															
2033	-															
2034	-															
2035	-															
2036	-															
2037	-															
2038	-															
2039	-															
Total Annual Debt Charges	29,140,000	-	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269

**Table B-4 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	1,023,298	0	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	993,493	1,043,478	1,020,463	1,070,728	1,123,468	1,178,807	1,236,871	1,115,303	1,168,003	1,223,194	1,280,992	1,341,521	1,378,590	1,231,955	1,287,735
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	2,066,775	1,020,464	1,070,728	1,123,468	1,178,807	1,236,871	1,115,303	1,168,003	1,223,194	1,280,992	1,341,521	1,378,590	1,231,955	1,287,735
<b>Closing Balance</b>	<b>993,493</b>	<b>0</b>	<b>-</b>												
Interest	20,805	0	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-5 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>-</b>														
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-6 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Operating Budget Forecast**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
<b>Expenditures</b>															
<b>Operating Costs</b>															
Labour Costs	580,000	595,000	610,000	625,000	641,000	657,000	673,000	690,000	707,000	725,000	743,000	762,000	781,000	801,000	821,000
Annual Operating Costs (incl: utility and chemicals)	213,000	229,000	246,000	263,000	282,000	303,000	324,000	347,000	371,000	396,000	423,000	452,000	483,000	514,000	546,000
Additional HVAC/Heating Requirements	59,000	60,000	62,000	64,000	66,000	68,000	70,000	72,000	74,000	76,000	78,000	80,000	82,000	84,000	86,000
Biosolids Upgrading and Processing	373,000	388,000	404,000	420,000	436,000	453,000	471,000	489,000	507,000	526,000	545,000	566,000	587,000	607,000	628,000
Maintenance Costs (2% of capital equipment)	539,000	552,000	566,000	580,000	595,000	610,000	625,000	641,000	657,000	673,000	690,000	707,000	725,000	743,000	762,000
<b>Sub Total Operating</b>	<b>1,764,000</b>	<b>1,824,000</b>	<b>1,888,000</b>	<b>1,952,000</b>	<b>2,020,000</b>	<b>2,091,000</b>	<b>2,163,000</b>	<b>2,239,000</b>	<b>2,316,000</b>	<b>2,396,000</b>	<b>2,479,000</b>	<b>2,567,000</b>	<b>2,668,000</b>	<b>2,749,000</b>	<b>2,845,000</b>
<b>Capital-Related</b>															
New Growth Related Debt	-	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269
New Non-Growth Related Debt	-	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816
Lifecycle Reserve Contribution (\$)															
<b>Sub Total Capital Related</b>	<b>-</b>	<b>8,377,085</b>													
<b>Total Expenditures</b>	<b>1,764,000</b>	<b>10,201,085</b>	<b>10,265,085</b>	<b>10,329,085</b>	<b>10,397,085</b>	<b>10,468,085</b>	<b>10,540,085</b>	<b>10,616,085</b>	<b>10,693,085</b>	<b>10,773,085</b>	<b>10,856,085</b>	<b>10,944,085</b>	<b>11,035,085</b>	<b>11,126,085</b>	<b>11,222,085</b>
<b>Revenues</b>															
Biosolids Revenue (\$@ \$0.80/m3)	1,425,000	1,482,000	1,541,000	1,602,000	1,664,000	1,730,000	1,797,000	1,867,000	1,936,000	2,008,000	2,082,000	2,160,000	2,239,000	2,318,000	2,399,000
Contributions from D.C./C.C. Reserve Fund	-	2,088,775	1,020,464	1,070,720	1,123,488	1,178,807	1,236,871	1,115,303	1,168,003	1,223,194	1,280,992	1,341,521	1,378,590	1,231,955	1,287,735
<b>Total Operating Revenue</b>	<b>1,425,000</b>	<b>3,548,775</b>	<b>2,561,464</b>	<b>2,672,728</b>	<b>2,787,468</b>	<b>2,908,807</b>	<b>3,033,871</b>	<b>2,982,303</b>	<b>3,104,003</b>	<b>3,231,194</b>	<b>3,362,992</b>	<b>3,501,521</b>	<b>3,417,590</b>	<b>3,549,955</b>	<b>3,688,735</b>
<b>Net User Fee Recovery</b>	<b>339,000</b>	<b>6,652,310</b>	<b>7,703,622</b>	<b>7,856,357</b>	<b>7,609,617</b>	<b>7,659,279</b>	<b>7,506,215</b>	<b>7,633,782</b>	<b>7,580,082</b>	<b>7,541,892</b>	<b>7,493,083</b>	<b>7,442,564</b>	<b>7,617,495</b>	<b>7,576,131</b>	<b>7,535,350</b>

**Table B-7 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Net User Fee Recovery	339,000	6,652,310	7,703,622	7,856,357	7,609,617	7,659,279	7,506,215	7,633,782	7,580,082	7,541,892	7,493,083	7,442,564	7,617,495	7,576,131	7,535,350
Total Loading Tonnage(TPY)	33,086	33,575	34,064	34,554	35,009	35,491	35,980	36,461	36,893	37,329	37,771	38,218	38,655	39,039	39,427
<b>Net User Fee Recovery per TPY</b>	<b>10.26</b>	<b>190.13</b>	<b>226.16</b>	<b>221.71</b>	<b>217.36</b>	<b>212.89</b>	<b>206.62</b>	<b>209.37</b>	<b>205.71</b>	<b>202.04</b>	<b>190.38</b>	<b>194.74</b>	<b>197.06</b>	<b>194.07</b>	<b>191.12</b>
Net Present Value at Net Discount Rate (5%)	95,696,682														
Net Present Value at Net Discount Rate (5%) per TPY	77.78														

**Table B-1 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Capital Budget Forecast**  
**Inflated\$**

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Capital Expenditures</b>																
Equipment																
Structural/Architectural																
Siteworks																
Electrical, Instrumentation and Controls																
Mechanical / HVAC																
Construction Allowances, 4%																
Contingency - Estimating, 30%																
Engineering, 20%																
<b>Total Capital Expenditures</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Capital Financing</b>																
Provincial/Federal Grants																
Non-Growth Related Debenture Requirements																
Growth Related Debenture Requirements																
Operating Contributions																
Lifecycle Reserve Fund																
<b>Total Capital Financing</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table B-2 (sensitivity)**  
**Utilities Kingston**  
**Biogas Biosolids AD Facility - Design Concept 2**  
**Schedule of Non-Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816									
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Annual Debt Charges</b>	<b>6,038,816</b>	<b>-</b>														

Table B-3 (sensitivity)

Utilities Kingston

**Biogas Biosolids AD Facility - Design Concept 2**  
**Schedule of Growth Related Debenture Repayments**  
**Inflated\$**

Debenture Year	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
2030	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Debt Charges	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	-	-	-	-	-	-	-	-	-	-

Table B-4 (sensitivity)

Utilities Kingston

**Biogas Biosolids AD Facility - Design Concept 2**  
**Development Charge/Capital Charge Reserve Fund Continuity**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Opening Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charge Proceeds	1,346,042	1,406,988	1,401,111	1,463,870	1,529,439	1,597,946	1,669,521	1,744,302	1,822,433	1,904,063	1,988,350	2,078,457	2,171,555	2,268,823	2,370,448	2,476,625
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	1,346,042	1,406,988	1,401,111	1,463,870	1,529,439	1,597,946	1,669,521	1,744,302	1,822,433	1,904,063	1,988,350	2,078,457	2,171,555	2,268,823	2,370,448	2,476,625
Closing Balance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table B-5 (sensitivity)

Utilities Kingston

**Biogas Biosolids AD Facility - Design Concept 2**  
**Lifecycle Reserve Fund Continuity**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	
Opening Balance	-	-	-	-	-	-	-	-	2,100,298	4,263,605	6,431,811	8,786,863	11,150,766	13,585,587	16,093,453	18,676,554	21,337,149
Transfer from Operating	-	-	-	-	-	-	-	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Closing Balance	-	-	-	-	-	-	-	2,039,124	4,139,422	6,302,729	8,630,836	10,026,987	11,189,881	12,624,711	14,132,577	16,715,578	23,376,273
Interest	-	-	-	-	-	-	-	61,174	124,183	189,082	255,928	324,780	395,697	468,741	543,977	621,470	701,288

**Table B-6 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Operating Budget Forecast**  
**Inflated\$**

Description	Forecast															
	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
<b>Expenditures</b>																
Operating Costs																
Labour Costs	842,000	883,000	885,000	907,000	930,000	953,000	977,000	1,001,000	1,028,000	1,052,000	1,078,000	1,105,000	1,133,000	1,161,000	1,190,000	1,220,000
Annual Operating Costs (incl. utility and chemicals)	583,000	621,000	662,000	704,000	748,000	797,000	849,000	903,000	951,000	1,023,000	1,088,000	1,158,000	1,232,000	1,311,000	1,395,000	1,483,000
Additional HVAC/Heating Requirements	88,000	90,000	92,000	94,000	96,000	98,000	100,000	103,000	109,000	112,000	115,000	118,000	121,000	124,000	127,000	
Biosolids Upgrading and Processing	651,000	673,000	697,000	724,000	746,000	772,000	799,000	827,000	855,000	885,000	916,000	948,000	980,000	1,014,000	1,050,000	1,096,000
Maintenance Costs (2% of capital equipment)	781,000	801,000	821,000	842,000	863,000	885,000	907,000	930,000	953,000	977,000	1,001,000	1,026,000	1,052,000	1,078,000	1,105,000	1,133,000
<b>Sub Total Operating</b>	<b>2,945,000</b>	<b>3,048,000</b>	<b>3,167,000</b>	<b>3,268,000</b>	<b>3,384,000</b>	<b>3,505,000</b>	<b>3,632,000</b>	<b>3,764,000</b>	<b>3,901,000</b>	<b>4,046,000</b>	<b>4,195,000</b>	<b>4,352,000</b>	<b>4,515,000</b>	<b>4,685,000</b>	<b>4,864,000</b>	<b>5,049,000</b>
<b>Capital-Related</b>																
New Growth Related Debt	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	2,338,269	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	6,038,816	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124	2,039,124
Lifecycle Reserve Contribution (\$)																
<b>Sub Total Capital Related</b>	<b>8,377,086</b>	<b>8,377,086</b>	<b>8,377,086</b>	<b>8,377,086</b>	<b>8,377,086</b>	<b>8,377,086</b>	<b>2,039,124</b>									
<b>Total Expenditures</b>	<b>11,822,085</b>	<b>11,425,085</b>	<b>11,534,085</b>	<b>11,645,085</b>	<b>11,761,085</b>	<b>11,882,085</b>	<b>5,671,124</b>	<b>5,803,124</b>	<b>5,940,124</b>	<b>6,085,124</b>	<b>6,234,124</b>	<b>6,381,124</b>	<b>6,534,124</b>	<b>6,724,124</b>	<b>6,903,124</b>	<b>7,088,124</b>
<b>Revenues</b>																
Biosolids Revenue (@ \$0.80/m³)	2,484,000	2,571,000	2,661,000	2,754,000	2,848,000	2,948,000	3,050,000	3,156,000	3,265,000	3,379,000	3,496,000	3,618,000	3,743,000	3,873,000	4,007,000	4,146,000
Contributions from D.C./C.C. Reserve Fund	1,348,042	1,408,998	1,401,111	1,483,870	1,529,439	1,597,948	1,669,521	1,744,302	1,822,433	1,904,063	1,989,350	2,078,457	2,171,555	2,268,623	2,370,446	2,478,625
<b>Total Operating Revenue</b>	<b>3,830,042</b>	<b>3,977,988</b>	<b>4,062,111</b>	<b>4,217,870</b>	<b>4,378,439</b>	<b>4,545,946</b>	<b>4,719,521</b>	<b>4,900,302</b>	<b>5,088,433</b>	<b>5,283,063</b>	<b>5,485,350</b>	<b>5,686,457</b>	<b>5,914,555</b>	<b>6,141,823</b>	<b>6,377,448</b>	<b>6,622,625</b>
<b>Net User Fee Recovery</b>	<b>7,492,044</b>	<b>7,447,097</b>	<b>7,471,974</b>	<b>7,427,216</b>	<b>7,382,646</b>	<b>7,336,139</b>	<b>951,603</b>	<b>902,822</b>	<b>851,601</b>	<b>802,061</b>	<b>748,774</b>	<b>694,667</b>	<b>639,560</b>	<b>582,301</b>	<b>525,676</b>	<b>465,499</b>

**Table B-7 (sensitivity)**  
**Utilities Kingston**  
**Biosolids AD Facility - Design Concept 2**  
**Net Wastewater Billing Recovery**  
**Inflated\$**

Description	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Net User Fee Recovery	7,492,044	7,447,097	7,471,974	7,427,216	7,382,646	7,336,139	951,603	902,822	851,601	802,061	748,774	694,667	639,560	582,301	525,676	465,499
Total Loading Tonnage(TPY)	39,818	40,214	40,609	40,993	41,381	41,773	42,168	42,567	42,969	43,376	43,786	44,201	44,619	45,041	45,467	45,897
Net User Fee Recovery per TPY	188.16	186.19	184.00	181.18	178.41	175.62	22.87	21.21	19.82	18.49	17.10	16.72	14.33	12.93	11.56	10.14
Net Present Value at Net Discount Rate (5%)																
Net Present Value at Net Discount Rate (5%) per TPY																